

Upgrading on-site sanitation systems in low-income settlements in Dakar, Kampala and Lusaka

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Figure 1 – Source: LWSC

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Summary

In cities of many low-income countries, households living in the Low-Income Settlements (LISs) often rely on On-site Sanitation (OSS) Systems – septic tanks or pit latrines – for their sanitation needs. Due to lack of awareness, limited ability to pay for the cost of building a safe OSS and the scarcity of local technical staff, poor households often end up using unsafe OSS that pose environmental and public health risks.

This case study summarizes the approaches that the cities of Dakar, Kampala and Lusaka have taken to convert unsafe OSSs to safe systems, through promotion of innovative OSS models and financing mechanisms to help households pay for the OSS upgrades. It also highlights the lessons learned.

While comparing the models on various parameters, this case study does not seek to make judgement on which model is better, as there is no one-size-fits-all approach. Rather, the study aims to shed light on the context for the design and how each model is influencing outcomes of OSS upgrades, which may be of interest to policymakers and practitioners exploring ways to improve OSS safety in urban LISs.

Overview

Geographical information

Country: Senegal

City: Dakar

City population: 3,800,000

Country: Uganda

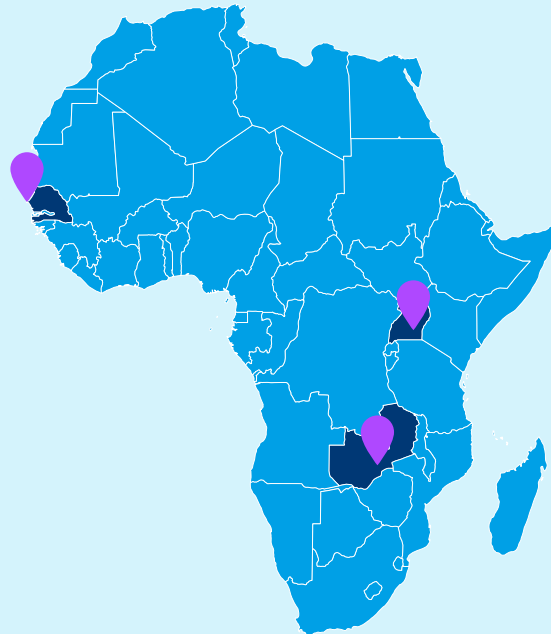
City: Kampala

City population: 1,600,000

Country: Zambia

City: Lusaka

City population: 2,600,000



Problem

- Dakar, Kampala and Lusaka are densely populated Sub-Saharan African cities with populations ranging from 1.6 to 3.8 million. Most of their population lives in Low-Income Settlements (LISs), where households often rely on poorly constructed pit latrines for their sanitation needs due to both lack of awareness and affordability.
- In Lusaka and Kampala, many LISs are in areas with high groundwater table and where the soil is prone to infiltration of human waste. This increases the risk of waterborne diseases associated with poor sanitation, such as cholera and diarrhoea. Dakar also has a problem of seasonal floods that creates an additional challenge for sanitation.

Solution

- To address the challenges of OSS safety and affordability for the poor, the three cities have experimented with four different approaches to toilet technologies and financing. Kampala and Lusaka worked with local masons and construction companies for households to upgrade from unlined pit latrines to lined emptiable pit latrines. Dakar adopted innovative technologies for flooded and flood-prone areas. To help households pay for the upgrades, the three cities partnered with banks or microfinance institutions (to offer sanitation loans to beneficiary households. Lusaka and Kampala also offered subsidies that are advertised as “discounts” to encourage household uptake.

Problem

Dakar, Kampala and Lusaka are densely populated capital cities in Sub-Saharan Africa, with resident populations ranging from 1.6 to 3.8 million. The poorest households in these cities predominantly rely on unlined, poorly constructed pit latrines for their sanitation needs. Table 1 summarizes the basic sanitation scenario in these cities.

Table 1: OSS access.

	Dakar (region)	Kampala	Lusaka
Population (millions)	3.8	1.6	2.6
% of population in low income settlements	No information	60%	70%
% of population relying on sewers	21%	2%	16%
% of population relying on pit latrines	17%	75%	64%
% of population relying on septic tanks	58%	23%	22%

A major sanitation challenge for these cities is that most of their LISs are in low-lying areas with high groundwater tables or rocky terrains, where the soil is prone to infiltration of human waste. This increases the risk of environmental pollution and endangers public health, as residents are prone to water borne diseases such as cholera and diarrhoea. Situated on the Atlantic coast, Dakar has an additional problem of seasonal floods due to its low altitude, creating further challenges for sanitation. While Dakar has a much higher percentage of population connected to sewers or using septic tanks compared to Lusaka and Kampala, most Dakar's pit latrine users are the poorest households residing in the peri-urban areas of Pikine and Guediawaye, which are also more vulnerable to floods.

In LISs, households often lack the resources or awareness to upgrade their OSS. The cost of a properly OSS system varies significantly across countries with the least costing USD 200–300, which is not affordable for households below or just above the poverty line. Major sanitation concerns for all three cities include 1) identifying affordable OSS designs that meet safety requirements in their topographies and 2) coming up with financing mechanisms to help poor households pay for the OSS.

Solution

Design and financing of the models

Table 2 summarizes the models that the cities adopted to convert unsafe OSS to safe systems. Kampala and Lusaka promoted standard low-cost technologies as shown in Figure 3 and Figure 4, respectively, such as upgrading from unlined pit latrines to lined emptiable pits that conform to local standards. Lusaka experimented with two different models in parallel – a community-based model and a contractor model for construction. Meanwhile, Dakar searched for flood prone technologies through an open tender and adapted the selected technologies to the local context.

Table 2: Design of the models for LISs

	Dakar	Kampala	Lusaka (community-based model)	Lusaka (contractor model)
Funder	Bill & Melinda Gates Foundation (BMGF)	BMGF	African Development Bank	World Bank
Main implementer(s)	Oxfam (INGO), in collaboration with Banque Nationale pour le Développement Economique-BNDE (national bank)	Kampala Capital City Authority (KCCA) (service authority in charge of OSS)	Lusaka Water Supply and Sanitation Company (LWSC) (regional utility & sanitation service authority)	LWSC
Start-end date	2014–2020	2020/4–2022/4	2018/12–2021/12 (construction) Program to end in 2022/8	2019/6–2021/12 (construction) Program to end in 2022/8
Toilet technologies	Flood prone technologies	Standard technologies that meet the KCCA minimum standards	Standard technologies	Standard technologies
Constructed by	Local masons, with materials procured from local hardware stores and by toilet designers/ firms	Local masons, with materials procured by contracted construction companies	Local masons, with materials procured by contracted consultants	Contractors from construction companies



Figure 3 – Toilet model promoted in Kampala. Source: KCCA



Figure 4 – Toilet model promoted in Lusaka. Source: LWSC

To help households pay for the cost of OSS upgrades, Kampala and Lusaka offered subsidies that covered most of the costs, whereas Dakar established a revolving fund. Figure 5 and Figure 6 show marketing materials used in Kampala and Lusaka, respectively. All cities partnered with banks or microfinance institutions to offer sanitation loans to beneficiary households as highlighted in Table 3.

Table 3: Financing arrangements

	Dakar	Kampala	Lusaka
Cost of toilet (USD)	621	284	489
Subsidy provided	N/A	Tiered subsidy	Flat subsidy
Subsidy amount (USD)	0	154–284	351
% of cost subsidized	0	Low income: 54% Vulnerable poor: 100%	72%
Down payment	0	20%	0
Interest rate on loans	3.5%	18–24%	10–20%
Payback period (months)	24-36	Varies	6–8
Collateral required	No	Bank required Microfinance institutions -waived	No
Payment vs construction timeline	Payment starts after the construction is completed	Payment and construction start at the same time	Construction starts once household makes at least 50% payment; the toilet is handed over after 100% of payment is made



Figure 5 – Marketing materials for Kampala, Source: KCCA



Figure 6 – Marketing materials for Lusaka. Source: LWSC

Outcomes

Table 4 presents the outcomes from each of the programmes. Dakar was unable to complete its target due to procurement challenges and household acceptance. KCCA revised its target from 750 to 200 due to limited subsidy funds. The Kampala programme was delayed by the slow conversations with banks to offer favourable sanitation loans. Both programmes in Lusaka met and exceeded their targets, but also had to revise the original target of 12,500 toilets (combined for both programmes) to 5,500 in the implementation process, due to the increasing cost of the toilet.

Table 4: Results of the Programs

	Dakar	Kampala	Lusaka (AfDB model)	Lusaka (WB model)
Target of OSS	500	200 (revised)	2,000 (revised)	3,500 (revised)
No. of OSS constructed (to Dec. 2021)	200	85	2,252	3,500
% of target met	40%	42.50%	112.6%	100%

Lessons learned

Among the three cities, Kampala and Lusaka put more focus on affordability through subsidies, and marketing strategies adopted by both have shown effectiveness of advertising subsidies as “discounts”, which created the impression that the offers were time-bound and encouraged early uptake. The Dakar model was aimed at identifying innovative and affordable technologies for its flood prone terrain, with support to households on payment in instalments. The two models in Lusaka have been most effective in bringing down costs through economies of scale, especially the community-based model.

The main challenge faced by all cities was getting households to repay their loans. Households needed constant nudging to stay on track. All programmes also faced challenges with the estimated costs of OSS being higher than planned and with procuring all the required materials locally. Procurement issues were to a large extent resolved through contracting professional suppliers or construction companies yet costing remained an issue that caused cities to revise their targets downward.

Useful links

Presentation on Kampala’s approach: <https://s3.amazonaws.com/resources.cwis.com/learning/229/CWISWebinarPresentationKCCAJul29.pdf>

Presentation on Lusaka’s approach: <https://s3.amazonaws.com/resources.cwis.com/learning/228/CWISWebinarPresentationLWSCJul29.pdf>

Further reading and references

- KCCA. 2020. Citywide Inclusive Sanitation (CWIS) Incentive & Subsidy Model.
- KCCA. 2020. CWIS Subsidy and Incentive Models.
- KCCA. 2020. Scaling up Access to Improved Sanitation in Kampala: City Wide Inclusive Sanitation Initiative (Water for People interventions).
- KCCA. 2021. Citywide Inclusive Sanitation (CWIS) Program Incentive and Subsidy Model Targeting 750 Landlords in Kampala.
- LWSC/LSP. 2018. Lusaka Sanitation Program: Formative Research Report.
- Oxfam. 2013. Amélioration des conditions sanitaires pour les ménages les plus vulnérables dans les zones inondables de Pikine et Guédiawaye, Dakar – Sénégal.
- Oxfam. 2016. Evaluation du processus pour le Projet d’assainissement dans les zones inondables et inondées de Dakar.
- ONAS/Oxfam. 2017. Amélioration des conditions d’assainissement des populations les plus vulnérables dans les zones inondées : Manuel de contrôle techniques des technologies d’assainissement innovantes.
- ONAS. 2018. Enquête de satisfaction des ménages bénéficiaires des toilettes issues des Technologies d’Assainissement Innovantes.

About the institutions / organisations

L'Office National de l'Assainissement du Sénégal (ONAS) is the National Sanitation Office of Senegal. onas.sn/qui-sommes-nous/notre-vision



Oxfam is a global non-profit organization, implementing sanitation program in Senegal. www.oxfam.org/en/what-we-do/about

Kampala Capital City Authority (KCCA) is the local government of the City of Kampala in Uganda. www.kcca.go.ug/about-the-authority



Water for People (WfP) is a global non-profit helping improve access to clean water and sanitation, subcontracted by KCCA to implement the programme. www.waterforpeople.org/uganda



Lusaka Water Supply and Sanitation Company (LWSC) is the water and sanitation utility operating in Lusaka Province, Zambia. www.lwsc.com.zm/about-us

Monitoring, Learning and Evidence (MLE) partner: **Athena Infonomics** is a data-driven global consultancy, supporting eight cities in Sub-Saharan Africa and South Asia in their Citywide Inclusive Sanitation programmes. www.athenainfonomics.com/about



About the IWA Inclusive Urban Sanitation Initiative

IWA's Inclusive Urban Sanitation initiative responds to a huge and growing public need - safe sanitation in combination with access to safe drinking water and hygiene underpins good health. The aim of this initiative is reshaping the global urban sanitation agenda by focusing on inclusive sanitation service goals--and the service systems required to achieve them - rather than the traditional singular focus on expanding sewer networks and treatment works. This forms part of IWA's larger agenda to promote inclusive, resilient, water-wise, and sanitation-secure cities.

About the Inclusive Urban Sanitation Stories

The Inclusive Urban Sanitation stories are documenting some of the policies, practices, and approaches that demonstrate how stakeholders especially those in urban areas (e.g., public sector, operators, academics, regulators, and other key actors) are taking part or contributing to Sustainable Development Goal 6 which require water and sanitation concepts and norms to look beyond technology and the usual focus on building infrastructure. Increased focus is on safety, inclusion, environment, public health, and multiple technology solutions tailored to different geographies and socio-economic contexts for building climate-resilient cities. The stories aim to inspire urban stakeholders to discuss ways for advancing inclusive urban sanitation, especially in low- and middle-income countries.

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